

REMARKS AND ARGUMENTS

The Office Action dated May 18, 2007 has been carefully reviewed, together with the claims of the captioned application and the new prior art cited in the rejection of the claims. For the reasons set forth below it is believed that the claims of the application are patentable over the prior art of record.

Status of the Application

Claims 1-15 and 21-27 are pending in the captioned application. Claims 7 and 12 are no longer withdrawn from consideration.

An Appeal Brief was filed by Applicant on or about July 13, 2006.

Open Issues

In the Office action, the Examiner apologizes for, in effect, starting over with the examination of the captioned patent application. It is stated in the Office Action that this is necessary in order to provide the best possible quality examination.

Restriction Requirement

In the interest of providing the best possible quality of examination, the Examiner should address the open issue of the restriction requirement mailed January 18, 2007. The Examiner required restriction of the claims, as detailed in three groups. The restriction requirement was based on the conclusion that the inventions of each group were distinct.

Applicant responded to the restriction requirement, with traverse, showing that the three groups of inventions were indeed not distinct under the rules. Further, the Examiner indicated in

the Restriction Requirement that claims 1-20 were pending in the captioned application. Indeed, claims 1-15 and 21-27 were (and still are) pending in the application. In the Restriction Requirement, claims 21-27 were not placed in any of the three groups identified by the Examiner as being distinct.

It was also noted in Applicant's response to the Restriction Requirement that restriction of the claims by the Examiner was severely untimely. An initial Election of Species was made by the Examiner in the captioned application on January 4, 2005. Two non-final office actions were subsequently mailed by the Examiner, in which the claims of the application were rejected based on the prior art found by the Examiner during the search of the prior art. A final office action was mailed on January 13, 2006. Applicant responded by the filing of a Notice of Appeal and an Appeal Brief. Now, two and one-half years after the mailing of the initial Election of Species, after a rigorous examination and responses filed by Applicant, and after the filing of an appeal brief, the Examiner seeks to consider again, at this late date, the issue of distinct inventions.

In the interest of providing the best possible quality examination, it is respectfully requested that the Examiner address the Applicant's response to the Restriction Requirement.

Verbally Cited Prior Art

After the filing of Applicant's Appeal Brief, the Examiner called the undersigned and indicated that the claims were too broad and not patentable, in view of prior art known by two other examiners with whom the Examiner conferred. The Examiner stated in the telephone conference that the claims were unpatentable in view of exhaust cutouts as sold in the JC Whitney Company auto parts catalogue, and in view of NASCAR trailers. No documentary references were made of record by the Examiner in connection with this prior art. Rather, the Applicant conducted prior art searches to find such prior art verbally cited by the Examiner during the telephone conference. The Applicant filed an information disclosure statement identifying the JC

Whitney catalogue and the exhaust cutouts, as well as other patents disclosing the very same technology. The applicant could find no prior art relating to NASCAR trailers even remotely relevant to the claimed invention.

Thus, in the interest of providing the best possible quality examination, it is respectfully requested that the Examiner make of record the prior art concerning the NASCAR trailers. If such prior art is so relevant that the claims were deemed unpatentable thereover, as asserted by the Examiner in the telephone conference with the undersigned, then such prior art should be made of record by the Examiner. It is the desire of the Applicant that the claims of the application be patentable over the prior art known to both the Applicant and the Examiner, and thus it is incumbent on the Examiner in carrying out the duties as an agent of the U.S. Patent and Trademark Office to make such prior art of record, especially when such prior art is apparently known to the examiners of the Patent Office.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claim 2 of the captioned application is rejected by the Examiner as failing to comply with the first paragraph of 35 U.S.C. §112, in that the claim does not satisfy the written description of the patent statutes.

Insofar as claim 2 was filed with the application, it is a part of the written description and is thus fully supportive of itself.

Nevertheless, claim 2 has been amended to specify that the visual display shows the difference in operation of the engine when the aftermarket apparatus is operational and nonoperational. The Examiner is thanked for taking notice of the language of the claim.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 2, 24 and 25 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

It is stated in the Office Action that claim 2 is indefinite and that the word “when” in line 2 should be replaced with the phrase “engine performance when the aftermarket apparatus is.” It is believed that the current amendment to claim 2 by the Applicant makes such claim definite and in compliance with the statutes.

Claim 24 is rejected as being indefinite, in that the claim terminology “simultaneously display an engine performance parameter resulting from the aftermarket apparatus switched in and out of operation” is unclear. It is believed that claim 24 is definite as it stands and is in full compliance with the statutes. One skilled in the art having understood the description of the captioned application would clearly know the meaning of claim 24, when also read in view of dependent claims 22 and 23. Claim 22 specifies that the programmed processor monitors the engine performance parameters when the aftermarket apparatus has been switched into operation and switched out of operation. Claim 23 specifies that the programmed processor stores the engine performance parameters. Claim 24 simply specifies that the programmed processor simultaneously displays the engine performance parameters resulting from the aftermarket apparatus switched into and out of operation. Accordingly, it is submitted that claim 24 is clear and definite.

Claim 25 is rejected as being indefinite, in that the claim terminology “programmed to calculate and display a difference between said engine performance parameters” is unclear. Again, one skilled in the art having read and understood the specification of the captioned application would readily understand the claim terminology at issue. Once the programmed processor monitors an engine operating parameter when the aftermarket apparatus is operational, and when

the aftermarket apparatus is not operational (switched out of operation), the processor can calculate a difference between the before and after parameter, and display the same.

If the Examiner still considers these claims to be unclear, it is respectfully requested that it be pointed out exactly where the lack of clarity exists in such claim terminology. Otherwise, it is respectfully requested that the Examiner withdraw the rejections based on 35 U.S.C. §112.

Rejections Under 35 U.S.C. § 103(a)

Claims 1, 6-15 and 21 are rejected as being unpatentable over U.S. Pat. No. 6,596,163 by Parker, in view of U.S. Pat. No. 5,159,915 by Saito et al., hereafter “Saito.” In the rejection of the claims, such as independent claim 1, the Examiner considers that the Parker reference discloses the limitations of claim 1, except for the switch mechanism, which the Saito reference shows. For the reasons set forth below, it is believed that a prima facie case of obviousness has not been established.

Claim 1

Claim 1 of the captioned application includes an engine performance demonstration unit having a mobile carrier to which an engine is mounted, aftermarket apparatus that modifies the properties of fuel to be combusted to thereby affect the operation of the engine, and a switch mechanism for switching the aftermarket apparatus into operation and out of operation while the engine is running.

Saito Not Aftermarket Apparatus

In the rejection of claim 1, the Examiner refers to the Parker device 10 as the claimed “aftermarket apparatus” and also refers to the heating coil 4 of the Saito reference as the claimed

“aftermarket apparatus.” Subsequent to these statements, the Examiner draws a conclusion in reference to the “aftermarket apparatus” without clarifying which apparatus of which reference is being referred to. This lack of clarity obfuscates the rejection and is not exemplary of the best possible quality examination. The attention of the Examiner is drawn to M.P.E.P §706 where it is stated that “The goal of examination is to clearly articulate any rejection ...”

The Examiner considers the Saito reference to be relevant in that it discloses a fuel injector having a heating coil for heating the fuel so that the hot fuel is more efficiently injected into the engine to improve performance. High frequency electrical current is switched through the heating coil to induce eddy currents in other metallic objects and thereby heat the objects, and the fuel in contact with the metallic object. The Examiner considers the “electromagnetic coil 4” to be the claimed aftermarket apparatus.

An Internet Google search of the definition of “aftermarket” apparatus includes the definitions of:

1. Products and services used in the repair and maintenance of vehicles.
2. The market for replacement parts or accessories for a product.
3. Vehicle accessories that are not fitted by the original manufacturer.
4. Any part or component that is bought or sold that is not original equipment included when the car was produced brand new.
5. Generally, replacement parts and high performance products that are non-OEM

It is submitted that the fuel heating coil 4 of the Saito reference is not an aftermarket apparatus. This is believed to be the case as the fuel heating coil 4 described in the Saito reference would not be an Original Equipment Manufacturer (OEM) part because of the complexity of the system used to operate and control the fuel heating coil 4. Stated another way, the Saito fuel heating system is complicated and would be expensive, would require extensive modification of an existing engine injection system, and there would be no market for the same as

an aftermarket item.

As noted above, an aftermarket apparatus is that which can be retrofitted on an existing product. It is not known how the fuel heating coil 4 can be retrofitted on existing vehicles and made to operate, without requiring other non-OEM equipment. For example, it is not known to the undersigned how the heating coil 4 can be mounted to an existing vehicle, without also having available the high frequency electric current source 7 or the switch which is not shown or otherwise described in the Saito reference. The undersigned conducted a quick search of the JC Whitney automobile parts catalogue to determine if the high frequency current source or the switch is available as aftermarket apparatus. None could be found. However, the Examiner is urged to conduct a search of the prior art to determine if high frequency current sources and switches are available as aftermarket apparatus to power the heating coil 4. If fuel heating coils are not presently aftermarket apparatus, then it is apparent that the corresponding high frequency electric current sources and switches are also not themselves aftermarket apparatus. Consequently, it is submitted that in view of the foregoing, if anything would be considered as aftermarket apparatus, then the whole system might be considered as the aftermarket apparatus, as it takes all of the heating apparatus of the system to make the fuel heating coil operational. Stated another way, if the fuel heating coil 4 is made available as aftermarket apparatus, but the high frequency electric current source or the switch are not also available either as OEM equipment, or as aftermarket apparatus, then the fuel heating coil 4 itself would be of little use to a vehicle owner desiring to gain the advantage of the Saito invention.

This conclusion is believed to be well founded because there is no suggestion in the Saito reference that such a fuel injector heating system could be substituted for an existing fuel injection system. As noted above, the Saito fuel injection system requires a source of a high frequency current of sufficient power to heat fuel as the fuel passes through either the fuel line or the fuel injector. When a high frequency current supply is used in an automobile, or any other system where there are processors and computing apparatus, the high frequency current supply would

have to be carefully shielded from the supply to each of the injectors, which would increase the cost of the system, and if not properly done, could cause interference with the automobile computer, as well as any radio or satellite communication system used within the automobile. It is well known that when high frequency signals are switched on and off, there is created electromagnetic interference that is transmitted through the air. This disadvantage would make it difficult to install the Saito fuel injection system in a vehicle as aftermarket apparatus.

More important than the foregoing, the Saito fuel injection system is not manually switched on and off by the operator, but rather automatically by the system as the need dictates. The fuel injector can be activated to heat the fuel passing therethrough during starting, controlled according to engine load, RPM or engine temperature. If used during engine starting, then an additional timer and sensor would be needed to sense when the engine is being started and to time the interval in which the switch is to be closed to supply the heating coil with the high frequency current, and thereafter opened. If the Saito injection system is to be controlled according to engine load, RPM or temperature, then additional sensors would be required to sense when the requisite load, RPM or temperature existed, and control the amount of electrical energy coupled to the heater coil of each injector. As noted at the top of column 4 of the Saito reference, if it is desired to obtain engine idle stability, stability of spark of an ignition system, lean burn and recirculation of exhaust gasses, then the fuel injectors would have to be continuously controlled - probably by the on board vehicle computer.

Fig. 3 of the Saito reference illustrates the effect of the heated fuel injected into an engine, as a function of the production of hydrocarbons. Once the high frequency energy is switched on to the heating coil of the injector, the hydrocarbon content of the exhaust emissions falls, and when the fuel is no longer heated, the hydrocarbon content rises. Accordingly, one skilled in the art seeking to employ the advantages of the Saito fuel injection system would maintain the fuel heated in a controlled manner at all times, preferably under control of the on board computer preprogrammed at the factory by the vehicle manufacturer. It is submitted that because of the

significant modifications that would have to be made to an existing fuel injection system to retrofit the same with the Saito fuel injection system, any warranty by an OEM would be voided.

As noted above, the operation of the Saito fuel injection system requires a source of high frequency current. It is believed that the power requirements of such a current source would be substantial, in that the fuel is rapidly heated from about 84° F (29° C) to about 194° F (90° C). This is described at the top of column 4 of the Saito reference. In order to rapidly elevate fuel in a metal fuel line, as required in the Fig. 1 embodiment, a substantial amount of electrical power would be required to heat both the metal fuel line as well as the fuel passing therethrough. Multiply this power times the number of injectors required of an engine, and it can be seen that a large powerful and expensive high frequency current supply would be required. The fuel line metal must be of a particular type of metal in which eddy currents form in response to the magnetic field of the high frequency energy, it being realized that some metals would not be suitable materials for making fuel lines to be used with the Saito fuel injection system. When eddy currents cannot be generated within the metal, then no heating of the metal results.

The foregoing is set forth to illustrate that the Saito fuel injection system is complicated, costly and not retrofittable into an existing vehicle, and thus is not marketable as aftermarket apparatus of the type claimed. It is not that the retrofitting of a Saito fuel injection system would be difficult, as some aftermarket apparatus may be, but the Saito fuel injection system would require substantial additional apparatus, and some type of controller connected to engine sensors to control the high frequency current supply coupled to the heating coils of the fuel line or injectors. As an alternative, the on board computer of the vehicle would have to be modified to accommodate possible additional sensors, control of the switch, and a software routine to control the fuel injector heater as a function of starting the engine, of engine RPM and load conditions or engine temperature.

Secondly, the switch described in the Saito reference does not switch the fuel injector on

or off. Indeed, the fuel injector must be operational all the time in order for the engine to run. It is readily apparent that if the fuel injector were to be switched off, the engine could no longer run as it would be starved of fuel. Thus, the Saito fuel injector itself cannot be the claimed aftermarket apparatus that is stated in claim 1 to be switched into operation and out of operation. In the rejection of claim 1, the Examiner concluded that Saito discloses "aftermarket apparatus 4." The reference numeral "4" identifies the electro-magnetic coil through which the high frequency energy flows to heat the fuel passing through the injector. The coil 4 is not described as being retrofitted to an existing fuel injector or fuel line. Rather, from the description of the various embodiments of the fuel injection heating mechanisms, all such heating mechanisms are made integral with the body of the injector or fuel line during manufacture thereof. Thus, it appears that the Saito fuel heating system would be Original Equipment Manufacture apparatus originally provided on the vehicle, rather than aftermarket apparatus retrofitted thereon by the user.

Saito Not Combinable with Parker

If the Examiner considers the permanent magnets of the Parker reference as the claimed "aftermarket apparatus," then the rejection is erroneous for the following reasons.

As noted above, the Examiner attempts to establish a prima facie case of obviousness by combining the Saito fuel heating coil 4 and switch with the equipment described in the Parker reference. The Parker reference discloses a device for the treatment of carbon based fuel. Included are permanent magnets positioned beside the fuel line to subject the fuel to a large magnetic field. The magnets are separated from the fuel line by respective foam pads. The magnets and the foam pads are housed within a metal housing through which the fuel line extends.

Importantly, the magnets are permanent magnets, and not electromagnets. The permanent magnets are powdered iron ceramic of grade 8 (column 4, lines 45-48). As can be seen from the description and drawings of the Parker reference, there is no wire coil or electrical energy source

which would be necessary for an electromagnet. With permanent magnets, the magnetic field is constantly available and cannot be switched on or off. Indeed, this would seem to be advantageous as it is always desired to reduce pollutants from carbon based fuels. There is no suggestion in the Parker reference of removing the magnetic field from the fuel line, or to switch the magnetic field on and off.

As noted above, the Saito reference suggests the use of a switch to switch the high frequency current source on and off to heat the fuel. The Examiner considers that it would be obvious to use such switch to switch the Parker fuel treatment device on and off while the engine is running to provide flexibility of operation of the aftermarket apparatus. The statement of obviousness does not make sense technically and is unsound. First, the Parker reference does not suggest that the magnetic device described therein can be switched on or off. If the magnetic field could be switched off, this would eliminate the effect of the magnetic field on the fuel and result in reduced fuel economy and increased pollutants, all of which are contrary to the express teachings of the Parker reference.

While the Examiner makes a sweeping statement of employing the Saito switch in the Parker magnetic device, the Examiner does not indicate what would be switched in the Parker reference. There is no electricity in the Parker magnetic device to be switched. The magnetic field of the permanent magnets cannot be switched on and off by the switch disclosed in the Saito reference. Indeed, it is well known that the use of an AC frequency field around a magnetized object destroys the magnetic field of the object. See U.S. Pat. No. 5,416,595 where a degaussing coil is conventionally provided with television sets to remove any magnetized properties of metal objects adjacent the picture tube. An AC frequency is coupled through the degaussing coil to remove the magnetic properties of nearby magnetized objects. Thus, it is submitted that switching any high frequency currents of the Saito system using the Saito switch in the Parker device would not be advantageous and ill advisable.

In the rejection of obviousness, the Examiner concludes that the use of the Saito switch in the Parker device would provide “flexibility.” It is not indicated in the rejection what would be made more flexible. Even if the magnetic field of the Parker permanent magnets could be switched off, then the expressed advantage sought to be achieved by Parker would be eliminated. This is not the type of “flexibility” that one skilled in the art generally desires to achieve. Accordingly, the “flexibility” assertion by the Examiner is challenged as a basis for combining the teachings of the cited references.

From the foregoing, it is submitted that one skilled in the art would not combine the teachings of the cited references as there is no motivation to do so, and there is insufficient evidence set forth by the Examiner as to how the teachings would be combined to achieve any flexibility. Accordingly, a prima facie case of obviousness has not been established.

Claim 6

Claim 6 specifies a magnet as the aftermarket apparatus. If the Examiner considers the Saito heating coil 4 to be the aftermarket apparatus, then the combining of the teachings of the references does not result in a device with a magnet, as claimed. This is because the Saito reference does not rely on a magnet to influence the molecules of fuel. Rather, the Saito reference relies on the heating of fuel to achieve its desired advantages. The invention of claim 6 is therefore believed to be patentable over the cited references.

Claims 7 and 12

Claims 7 and 12 specify the switch mechanism to be a valve for switching fuel. The Saito reference and the Parker reference do not suggest the use of such a switch mechanism. Nevertheless, the Examiner concludes that it would have been obvious to use a valve for switching fuel. The mere conclusions by the Examiner are not evidence of obviousness, and cannot be the basis for a rejection. In addition, the statements by the Examiner are not considered

as “prior art.” The attention of the Examiner is drawn to 35 U.S.C. § 103(a) where obviousness is established if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious ...” By rejecting a claim when the record does not show or suggest the subject matter claimed, the Examiner has failed to abide by the guidelines for examining claims, and has failed to heed the statutory basis for concluding that a claim is obvious.

The Examiner is thus respectfully requested to either withdraw the rejection of claims 7 and 12 or cite prior art providing evidence of obviousness of such claims.

Claims 8 and 9

Claims 8 and 9 recite an articulated mechanism for holding a plurality of magnets, where the articulated mechanism is hinged for operation.

The rejection of claims 8 and 9 is not based on any teachings of the prior art of record. Rather, the Examiner has rejected such claims as being a matter of design choice. This assertion is not by itself sufficient evidence of the obviousness of the subject matter claimed. The best possible quality examination of the subject matter of such claims is not facilitated by the lack of evidence of obviousness, and the repeated rejection of the claims. It is submitted that the Examiner’s rejection of claims 8 and 9 will not be sustained on appeal.

Claims 10 and 11

The subject matter of claims 10 and 11 have been rejected as being obvious over the prior art, but the Examiner has not cited any prior art as evidence of obviousness. Absent such evidence of obviousness, claims 10 and 11 are patentable.

Claims 13 and 14

Claims 13 and 14 are believed to be patentable for the same reasons set forth above in connection with claim 1.

Claim 15

Claim 15 specifies that the mobile carrier of claim 1 is a wheeled trailer to which the engine is mounted. Claim 15 is indicated as being rejected in the general rejection of claims 1, 16-15 and 21. However, claim 15 is not mentioned in the Office Action as to any reasons for the rejection, or where the subject matter of claim 15 can be found in the cited prior art. This rejection cannot be sustained, as the Examiner has failed to make any effort to even mention the basis of the rejection in view of the cited prior art. The Applicant respectfully requests only an average examination of the patentability of claim 15, even if it is not the best possible quality examination to which the Examiner indicated Applicant was entitled.

Claim 21

Claim 21 specifies a programmed processor for controlling the switch mechanism. The Examiner rejects claim 21 based on the conclusion that it would have been obvious, without any citation of evidence of such assertion. The Examiner has not only failed to provide any evidence of the switching mechanism in the prior art, but has also failed to provide any evidence of a processor for controlling such a switching mechanism. These chained rejections without making any evidence of record is not the proper procedure according to standard Patent Office practice. The Examiner is respectfully requested to base the rejections on evidence, or allow the claims.

Claims 2-5 and 22-27

Claims 2-5 and 22-27 are rejected under 35 U.S.C. §103(a) as being made obvious by the Parker reference, in view of the Saito reference, and Japanese published application 2001341552A, by Yukihiro.

Claim 2

Claim 2 specifies a visual display for visually showing the difference in engine operation when the aftermarket apparatus is operational and nonoperational. Claim 2 is believed to be patentable for the same reasons noted above in connection with claim 1.

Claim 3

Claim 3 specifies two visual displays, one for displaying an engine performance parameter when the aftermarket apparatus is operational, and another display for showing the performance parameter when the aftermarket apparatus is not operational. The Yukihiro reference discloses a single visual display for showing a time-series picture of the exhaust gas concentration. As such, the Yukihiro reference does not add to the other cited references in making the claimed invention obvious.

Claim 4

Claim 4 specifies that the visual display displays a flow rate of fuel to the engine. Neither the Parker reference nor the Saito reference nor the Yukihiro reference are concerned with the flow rate of fuel, and thus the teachings of such references do not make the claimed invention obvious.

Claim 5

Claim 5 is believed to be patentable for the same reason set forth above in connection with claim 1.

Claims 22-24

Claims 22-24 are believed to be patentable for the same reason set forth above in connection with claim 1.

Claim 25

Claim 25 specifies a programmed processor programmed to calculate and display a difference between the engine performance parameters when the aftermarket apparatus is switched into operation and out of operation. The Yukihiro reference does not suggest this subject matter, and thus a prima facie case of obviousness has not been established.

Claim 26

A specific rejection of independent claim 26 has not been set forth in the Office Action, insofar as setting out evidence of where the limitations of such claim are to be found in the cited prior art. This examination process by the Examiner does not result in the best possible quality of examination as expressed by the Examiner as the reason for "starting over."

Independent claim 26 has been amended to specify that the aftermarket apparatus is not a coil for heating the fuel. Thus, if the Examiner considers the heating coil of the Saito reference to be the aftermarket apparatus, then such reference does not make claim 26 obvious. On the other hand, if the Examiner considers the permanent magnets of the Parker reference to be the aftermarket apparatus, then claim 26 is still not made obvious as there is no suggestion in the cited prior art as to the manner in which the permanent magnets can be switched into and out of operation, as claimed.

Claim 27

A specific rejection of independent claim 27 has not been set forth in the Office Action, insofar as setting out evidence of where the limitations of such claim are to be found in the cited prior art. Again, this examination process by the Examiner does not result in the best possible quality of examination as expressed by the Examiner as the reason for “starting over.”

Independent claim 27 specifies one or more magnets to influence molecules of fuel fed to an engine, and a switch mechanism for switching the magnets into operation and out of operation while the engine is operating.

The Examiner has not cited any prior art which suggests switching magnets in and out of operation in connection with the influencing of the molecules of fuel. As noted above, the only switch cited by the Examiner is an electrical switch for switching the high frequency current source of the Saito fuel injection system. In the rejection of claim 27, or in claim 1 above, the Examiner has not indicated in any manner how the electrical switch of Saito can be used in the Parker reference to switch the magnets into operation and out of operation. This lack of connection between the teachings of the references leads to a failure in establishing a prima facie case of obviousness. Moreover, there is no motivation apparent from the Parker reference for wanting to disable the magnets, or remove the magnets from the vicinity of the fuel line, as this would be contrary to the advantages of the use of magnets with a fuel line.

This paper is being filed within the statutory period for response. In the event it is found that an extension fee is necessary to enter this paper, please deduct the appropriate amount from the deposit account of Roger N. Chauza, P.C., #504132.

Conclusion

In view of the foregoing, the Examiner is respectfully requested to reconsider the rejections of the claims and grant full allowance of the application.

Respectfully submitted,
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